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	L #	Hits	Search Text	DBs	Time Stamp
1	L1	3098	tal	USPAT; EPO; JPO; DERWENT	2001/12/06 06:49
2	L6	13	tal and (transaldolase or 2.2.1.2 or dihydroxyacetonetransferase or (dihydroxyacetone adj synthase) or (formaldehyde adj transketolase))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2001/12/06 06:51

	Document ID	Issue Date	Pages	Title	Current OR	Current XRef
1	US 6316232 B1	20011113	11	Microbial preparation of substances from aromatic metabolism/I	435/156	435/106 ; 435/108 ; 435/155 ; 435/183
2	US 6018021 A	20000125		Human transaldolase: an autoantigen with a function in metabolism	530/350	530/387.1 ; 536/23.1
3	US 5879909 A	19990309		Human transaldolase: an autoantigen with a function in metabolism	435/69.1	435/325 ; 530/350 ; 536/23.1 ; 536/24.1
4	US 5843760 A	19981201		Single zymomonas mobilis strain for xylose and arabinose fermentation	435/252.3	435/161 ; 435/163 ; 435/165 ; 435/243 ; 435/320.1 ; 435/822 ; 536/23.2
5	US 5835757 A	19981110		Distributed database management system for servicing application requests in a telecommunications switching system	707/10	709/201 ; 709/243
6	US 5726053 A	19980310		Recombinant Zymomonas for pentose fermentation	435/252.3	435/161 ; 435/163 ; 435/165 ; 435/243 ; 435/320.1 ; 435/822 ; 536/23.2 ; 536/23.7

	Document ID	Issue Date	Pages	Title	Current OR	Current XRef
7	US 5712133 A	19980127		Pentose fermentation by recombinant zymomonas	435/161	435/163 ; 435/165 ; 435/252.3 ; 435/320.1
8	US 5514583 A	19960507		Recombinant zymomonas for pentose fermentation	435/252.3	435/161 ; 435/163 ; 435/165 ; 435/243 ; 435/320.1 ; 435/822 ; 536/23.2 ; 536/23.7
9	US 5151354 A	19920929		Fermentation processes using amylolytic enzyme producing microorganisms	426/11	426/16 ; 426/19 ; 426/20 ; 426/29 ; 426/60 ; 435/203 ; 435/205 ; 435/254.21 ; 435/942
10	US 5100794 A	19920331		Amylolytic enzymes producing microorganisms, constructed by recombinant DNA technology and their use for permentation processes	435/6	435/202 ; 435/205 ; 435/251 ; 435/254.2 ; 435/254.21 ; 435/320.1 ; 435/483 ; 536/23.2 ; 536/23.7
11	WO 9825630 A1	19980618		TRANSALDOLASE-MEDIATED REGULATION OF APOPTOSIS		

	Document ID	Issue Date	Pages	Title	Current OR	Current XRef
12	US 6018021 A	20000125		Transaldolase proteins and peptides, useful for diagnosing multiple sclerosis		
13	US 5879909 A	19990309		Isolated human transaldolase gene - useful for raising antibodies for detecting neurodegenerative autoimmune diseases, especially multiple sclerosis		

1 (48 DUPLICATES REMOVED)

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(FILE 'HOME' ENTERED AT 06:51:33 ON 06 DEC 2001)

FILE 'MEDLINE, AGRICOLA, CAPLUS, BIOSIS, EMBASE, WPIDS' ENTERED AT 06:52:21 ON 06 DEC 2001
L1 77 S TAL AND (TRANSALDOLASE OR 2.2.1.2 OR DIHYDROXYACETONETRANSFER
L2 29 DUP REM L1 (48 DUPLICATES REMOVED)

=> d 1- ibib abs
YOU HAVE REQUESTED DATA FROM 29 ANSWERS - CONTINUE? Y/(N):y

L2 ANSWER 1 OF 29 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 1
ACCESSION NUMBER: 2001:50825 CAPLUS
DOCUMENT NUMBER: 134:111273
TITLE: Sequences of Coryneform bacteria opcA gene and uses thereof in fermentative preparation of L-amino acids
INVENTOR(S): Dunican, L. K.; McCormack, Ashling; Stapelton, Cliona; Burke, Kevin; Moritz, Bernd; Eggeling, Lothar; Sahm, Hermann; Mockel, Bettina; Weissenborn, Anke
PATENT ASSIGNEE(S): Degussa-Huls Aktiengesellschaft, Germany; Forschungszentrum Julich G.m.b.H.; National University of Ireland
SOURCE: PCT Int. Appl., 75 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001004322	A1	20010118	WO 2000-EP6300	20000705
W: AU, BR, CA, CN, HU, ID, JP, KR, MX, PL, RU, SK, UA, ZA				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
BR 2000006909	A	20010612	BR 2000-6909	20000705
EP 1109913	A1	20010627	EP 2000-945874	20000705
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				

PRIORITY APPLN. INFO.: US 1999-142915 P 19990709
US 2000-531267 A 20000320
WO 2000-EP6300 W 20000705

AB The invention provides protein and DNA sequences of opcA genes from coryneform bacteria. The invention further provides new measures for improved fermentative prepn. of amino acids, in particular L-lysine, L-threonine, L-isoleucine and L-trytophan.

REFERENCE COUNT: 6
REFERENCE(S):
(1) Hatakeyama, K; gDNA encoding glucose-6-phosphate dehydrogenase 1998
(2) Katsumata, R; JP 63102692 A 1988 CAPLUS
(3) Mitshubishi Chem Corp; JP 09224661 A 1997 CAPLUS
(4) Newman, J; FEMS Microbiology Letters 1995, V133(1-2), P187 CAPLUS
(5) Summers, M; Molecular Microbiology 1996, V22(3), P473 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 2 OF 29 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2001:816943 CAPLUS
TITLE: Transposons and plasmid vectors containing genes encoding enzymes needed for xylose or arabinose utilization, and their use in production of stable transgenic Zymomonas mobilis strains which can be used in ethanol production
INVENTOR(S): Zhang, Min; Chou, Yat-Chen
PATENT ASSIGNEE(S): Midwest Research Institute, USA
SOURCE: PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001083786	A2	20011108	WO 2001-US11334	20010406
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,				

LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-565233 A 20000501
CA 2000-2304929 A 20000502

AB The invention provides a transposon (Tn5 or Tn10 deriv.) for stable insertion of foreign genes into a bacterial genome, comprising at least one operon having structural genes encoding enzymes selected from the group consisting of xylAxylB, araBAD and talB/tktA, and at least one promoter for expression of the structural genes in the bacterium, and a pair of inverted insertion sequences, whereby said operon is contained inside the insertion sequences, and a transposase gene is located outside of the insertion sequences. The invention also provides a plasmid shuttle vector contg. said transposon with its enzyme encoding genes, at least one promoter (Peno or Pgap) for expression of the structural genes in the bacterium, and at least two DNA fragments having homol. with a gene in the bacterial genome to be transformed. The invention further provides the use of said plasmid vector in transformation of Zymomonas mobilis, resulting in significantly different strains which can utilize xylose or arabinose, and produce ethanol. The invention relates that genes xylA and xylB encode xylose isomerase and xylulokinase resp., while genes talB and tktA encode **transaldolase** and transketolase resp.. In the example section, the invention specifically presented the construction of plasmids Mini-Tn5TcxylA/xylB(X4) and Mini-Tn5TcxylA/xylB(X5), and which when integrated into the Z. mobilis genome resulted in recombinant prodn. of xylose isomerase and xylulokinase. The invention also specifically showed the integration of genes xylA, xylB, talB and tktA into the Z. mobilis genome using mini-Tn5, and showed the transformed Z. mobilis had the ability to produce ethanol from xylose. The invention further presented the construction of plasmid pZB1862-ldhL-ara (contains the araBAD operon), and showed the integration of it into the genome of Z. mobilis C25 transformants.

L2 ANSWER 3 OF 29 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2001:50828 CAPLUS
DOCUMENT NUMBER: 134:111274
TITLE: Sequences of Coryneform bacteria **tal** gene and uses thereof in fermentative preparation of L-amino acids
INVENTOR(S): Dunican, L. K.; McCormack, Ashling; Stapelton, Cliona; Burke, Kevin; Mockel, Bettina
PATENT ASSIGNEE(S): Degussa-Huls Aktiengesellschaft, Germany; National University of Ireland
SOURCE: PCT Int. Appl., 47 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001004325	A1	20010118	WO 2000-EP6304	20000705
W: AU, BR, CA, CN, HU, ID, JP, KR, MX, PL, RU, SK, UA, ZA				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1109915	A1	20010627	EP 2000-956165	20000705
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
BR 2000006915	A	20010731	BR 2000-6915	20000705

PRIORITY APPLN. INFO.: US 1999-142915 P 19990709
US 2000-531266 A 20000320
WO 2000-EP6304 W 20000705

AB The invention provides protein and DNA sequences of **tal** genes from coryneform bacteria. The invention further provides new measures for improved fermentative prepn. of amino acids, in particular L-lysine, L-threonine, L-isoleucine and L-trytophan.

REFERENCE COUNT: 2
REFERENCE(S): (1) Mitsubishi Chem Corp; JP 09224661 A 1997 CAPLUS
(2) Uwe, K; Plant Molecular Biology 1996, V30, P213

L2 ANSWER 4 OF 29 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2001:183717 CAPLUS
DOCUMENT NUMBER: 135:283801
TITLE: Degenerative minimalism in the genome of a psyllid endosymbiont
AUTHOR(S): Clark, Marta A.; Baumann, Linda; Thao, MyLo L. Y.; Moran, Nancy A.; Baumann, Paul
CORPORATE SOURCE: Microbiology Section, University of California, Davis,

CA, 95616-8665, USA
SOURCE: J. Bacteriol. (2001), 183(6), 1853-1861
CODEN: JOBAAY; ISSN: 0021-9193
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Psyllids, like aphids, feed on plant phloem sap and are obligately assocd. with prokaryotic endosymbionts acquired through vertical transmission from an ancestral infection. We have sequenced 37 kb of DNA of the genome of Carsonella ruddii, the endosymbiont of psyllids, and found that it has a no. of unusual properties revealing a more extreme case of degeneration than was previously reported from studies of eubacterial genomes, including that of the aphid endosymbiont Buchnera aphidicola. Among the unusual properties are an exceptionally low guanine-plus-cytosine content (19.9%), almost complete absence of intergenic spaces, operon fusion, and lack of the usual promoter sequences upstream of 16S rDNA. These features suggest the synthesis of long mRNAs and translational coupling. The most extreme instances of base compositional bias occur in the genes encoding proteins that have less highly conserved amino acid sequences; the guanine-plus-cytosine content of some protein-coding sequences is as low as 10%. The shift in base compn. has a large effect on proteins: in polypeptides of C. ruddii, half of the residues consist of five amino acids with codons low in guanine plus cytosine. Furthermore, the proteins of C. ruddii are reduced in size, with an av. of about 9% fewer amino acids than in homologous proteins of related bacteria. These observations suggest that the C. ruddii genome is not subject to constraints that limit the evolution of other known eubacteria.

REFERENCE COUNT: 35
REFERENCE(S):
(1) Andersson, J; Mol Biol Evol 1999, V16, P1178 CAPLUS
(5) Baumann, P; Annu Rev Microbiol 1995, V49, P55 CAPLUS
(6) Berg, K; J Mol Biol 1989, V209, P345 CAPLUS
(9) Chang, K; Tissue Cell 1969, V1, P597 CAPLUS
(10) Charles, H; Mol Biol Evol 1999, V16, P1820 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 5 OF 29 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 2001:257653 BIOSIS
DOCUMENT NUMBER: PREV200100257653
TITLE: Interplay of RNA polymerase II and III transcription units in the human **transaldolase** gene.
AUTHOR(S): Grossman, Craig E. (1); Banki, Katalin (1); Perl, Andras (1)
CORPORATE SOURCE: (1) SUNY Upstate Medical University, 750 East Adams Street, Syracuse, NY, 13210 USA
SOURCE: FASEB Journal, (March 8, 2001) Vol. 15, No. 5, pp. A1223. print.
Meeting Info.: Annual Meeting of the Federation of American Societies for Experimental Biology on Experimental Biology 2001 Orlando, Florida, USA March 31-April 04, 2001
ISSN: 0892-6638.
DOCUMENT TYPE: Conference
LANGUAGE: English
SUMMARY LANGUAGE: English

AB **Transaldolase** (**TAL**), a rate-limiting enzyme in the reversible non-oxidative branch of the pentose phosphate pathway (PPP), catalyzes the transfer of dihydroxyacetone between 3-carbon to 7-carbon sugars. The PPP plays an important role in glucose metabolism by providing ribose 5-phosphate for nucleic acid synthesis and NADPH for lipogenesis and neutralization of reactive oxygen species. **TAL** regulates sugar fluxes through the PPP and its final NADPH output. It controls the mitochondrial transmembrane potential and processing of apoptosis signals. **TAL**-controlled sugars serve as signal metabolites of gene transcription. Because the expression and enzymatic activity of **TAL** vary in a tissue- and developmentally-specific manner, **TAL** may be a key metabolic regulator of cell proliferation, apoptosis, and gene expression. A 5' promoter was mapped to a 205 bp segment spanning nucleotide positions (np) -153 to +52 relative to the start site of transcription. DNase footprinting of the 205 bp element unveiled two protected regions. While nuclear extracts from all cell lines protected np -102 and -90, significant footprint variations were observed at np -30 to -16. Database analysis showed the presence of consensus sequences for several transcription factors. Recombinant AP-2alpha exhibited high affinity binding to the 205 bp promoter in an electrophoretic mobility shift assay (EMSA) and footprinted np -102 to -90 and np -30 to -9. Interestingly, the coding sequence of **TAL** contains a **transaldolase**-associated repetitive element (TARE) bounded by exons 2 and 3. TARE is transcribed by RNA polymerase III (PolIII) in the opposite orientation of the **TAL** gene. EMSA and footprinting revealed novel binding motifs in a 55 bp TARE segment which influenced 5' promoter activity in a cell type-specific manner.

TAL transcription may involve a unique interplay between 5' RNA polymerase II and internal PolIII promoter units.

L2 ANSWER 6 OF 29 MEDLINE DUPLICATE 2
ACCESSION NUMBER: 2001555123 IN-PROCESS
DOCUMENT NUMBER: 21487229 PubMed ID: 11601619
TITLE: Effect of transketolase modifications on carbon flow to the purine-nucleotide pathway in Corynebacterium ammoniagenes.
AUTHOR: Kamada N; Yasuhara A; Takano Y; Nakano T; Ikeda M
CORPORATE SOURCE: Technical Research Laboratories, Kyowa Hakko Kogyo Company Ltd., Hofu, Yamaguchi, Japan.
SOURCE: APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, (2001 Sep) 56 (5-6) 710-7.
Journal code: AMC; 8406612. ISSN: 0175-7598.
PUB. COUNTRY: Germany, Federal Republic of
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 20011017
Last Updated on STN: 20011017

AB Transketolase, one of the enzymes in the nonoxidative branch of the pentose phosphate pathway, operates to shuttle ribose 5-phosphate and glycolytic intermediates together with **transaldolase**, and might be involved in the availability of ribose 5-phosphate, a precursor of nucleotide biosynthesis. The tkt and **tal** genes encoding transketolase and **transaldolase**, respectively, were cloned from the typical nucleotide- and nucleoside-producing organism Corynebacterium ammoniagenes by a PCR approach using oligonucleotide primers derived from conserved regions of each amino acid sequence from other organisms. Enzymatic and molecular analyses revealed that the two genes were clustered on the genome together with the glucose 6-phosphate dehydrogenase gene (zwf). The effect of transketolase modifications on the production of inosine and 5'-xanthylic acid was investigated in industrial strains of C. ammoniagenes. Multiple copies of plasmid-borne tkt caused about tenfold increases in transketolase activity and resulted in 10-20% decreased yields of products relative to the parents. In contrast, site-specific disruption of tkt enabled both producers to accumulate 10-30% more products concurrently with a complete loss of transketolase activity and the expected phenotype of shikimate auxotrophy. These results indicate that transketolase normally shunts ribose 5-phosphate back into glycolysis in these biosynthetic processes and interception of this shunt allows cells to redirect carbon flux through the oxidative pentose pathway from the intermediate towards the purine-nucleotide pathway.

L2 ANSWER 7 OF 29 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2001:213632 CAPLUS
DOCUMENT NUMBER: 135:2704
TITLE: Investigations on the influence of increased availability of erythrose-4-phosphate and phosphoenolpyruvate on the carbon flux into the aromatic amino acid pathway of Escherichia coli
AUTHOR(S): Kramer, Marco
CORPORATE SOURCE: Germany
SOURCE: Ber. Forschungszent. Juelich (2000), Juel-3824, i-x, 1-131
CODEN: FJBEE5; ISSN: 0366-0885
DOCUMENT TYPE: Report
LANGUAGE: German

AB In Escherichia coli wild-type strains C flux into the arom. amino acid pathway is limited by the intermediates of central metab., erythrose-4-phosphate (E4P) and phosphoenolpyruvate (PEP). The effects of increased supply of E4P and PEP on the C flux into the arom. amino acid pathway were investigated in aroB strains which were deregulated in the arom. amino acid pathway by introduction and expression of a gene of a feedback-resistant 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP)-synthase (aroFfbr). C flux was quantified by measuring excreted DAHP. For increasing availability of E4P expression of the plasmids coded genes **transaldolase** (talB), transketolase (tktA), and the combination of **transaldolase** and transketolase were increased in combination with increased expression of aroFfbr. Increased expression of talB increased C flux into the arom. amino acid pathway in correlation with higher specific activities of DAHP-synthases. For increasing availability of PEP the phosphoenolpyruvate-phosphotransferase-system (PTS) was disrupted. Increased expression of the plasmids coded genes of aroFfbr, glucose facilitator (glf) and glucokinase (glk), both of Zymomonas mobilis increased C flux into the arom. amino acid pathway. For increasing availability of both PEP and E4P, the genes tktA, talB and the operon of tktA and talB were combined with the previous genetic system. Overexpression of talB led to a further increase of C flux into the arom. amino acid pathway. Increased expression of talB correlated with even more higher increased specific activities of DAHP-synthases. A new glucose uptake and phosphorylation system was established in E. coli cells

in order to increase availability of E4P and PEP by circumventing C flux from glycolysis into the pentose phosphate pathway. After introducing the genes of the glucose facilitator (glf), the glucose dehydrogenase of Bacillus megaterium (gdhIV) and a homologous gluconate kinase (gntK) growth of an Escherichia coli mutant without glucose uptake and phosphorylation system occurred. However expression of glf, gdhIV, gntK and aroFfbr in a PTS--strain led to a low C flux into the arom. amino acid pathway.

REFERENCE COUNT: 107
REFERENCE(S):
(1) Adamowicz, M; Appl Environ Microbiol 1991, V57, P2012 CAPLUS
(2) Babu-Khan, S; Appl Environ Microbiol 1995, V61, P972 CAPLUS
(4) Backman, K; Ann NY Acad Sci 1990, V589, P16 CAPLUS
(5) Bailey, J; Science 1991, V252, P1668 CAPLUS
(6) Barnell, W; J Bacteriol 1990, V172, P7227 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 8 OF 29 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 3
ACCESSION NUMBER: 2000:67508 CAPLUS
DOCUMENT NUMBER: 132:106954
TITLE: Human **transaldolase**, its cDNA sequence, recombinant expression, autoantigenicity, and potential therapeutic uses
INVENTOR(S): Perl, Andras
PATENT ASSIGNEE(S): The Research Foundation of State University of New York, USA
SOURCE: U.S., 55 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6018021	A	20000125	US 1994-326119	19941019
US 5879909	A	19990309	US 1998-57762	19980409

PRIORITY APPLN. INFO.: US 1994-326119 19941019

AB Human **transaldolase** (**TAL**-H), an enzyme which acts as an autoantigen, the cDNA coding therefore, peptides derived therefrom, and DNA control elements assocd. therewith are disclosed in this invention. The invention also provides for the prodn. of human **transaldolase** using recombinant techniques. The cDNA and amino acid sequences of **TAL**-H are provided, along with the DNA sequence of the promoter region of the **TAL**-H gene. The invention also provides the DNA sequence of **transaldolase**-assocd. repetitive element (TARE (TARE6)), which was discovered to constitute an integral part of the human **TAL**-H gene. The **TAL**-H polypeptides may be used in immunoassays for detecting subjects making anti-**transaldolase** antibodies and/or in diagnosing neurodegenerative diseases, such as multiple sclerosis (MS). The invention showed the amino acid sequence homologies between **TAL**-H and various proteins of HTLV-I, HIV-1, kunjin flavivirus, dengue virus, hog cholera virus and poliovirus. These preferred **TAL**-H sequences are targets for immune responses (antibody and/or T-cell mediated) which cross-react with epitopes of proteins from these viruses. The invention also showed that **transaldolase** was specifically expressed in oligodendrocytes in the brain, cells which produce myelin in the central nervous system, which have primary involvement in pathogenesis of demyelinating diseases, including MS. Further, the invention showed that in a subset of patients with MS, antibodies to **transaldolase** were found in blood and cerebrospinal fluid. Still further, the invention showed the existence of cell-mediated immunoreactivity to **TAL**-H in patients with MS. Finally, the invention showed patients with HTLV-I-assocd. T cell leukemia (ATL) and with HIV infection were found to have antibodies that cross-reacted with **TAL**-H.

REFERENCE COUNT: 16
REFERENCE(S):
(1) Banki; AIDS Res Human Retrovir 1994, V10, P303 CAPLUS
(2) Banki, K; JBC 1994, V269, P2847 CAPLUS
(3) Banki, K; Proc Natl Acad Sci USA 1992, V89, P1939 CAPLUS
(4) Kaufman, D; Trends Pharm Sci 1993, V14, P107 CAPLUS
(8) Ohta, M; J Immunol 1986, V137, P3440 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 9 OF 29 MEDLINE DUPLICATE 4
ACCESSION NUMBER: 2000167206 MEDLINE
DOCUMENT NUMBER: 20167206 PubMed ID: 10702296
TITLE: Human **transaldolase**-associated repetitive

elements are transcribed by RNA polymerase III.
AUTHOR: Perl A; Colombo E; Samoilova E; Butler M C; Banki K
CORPORATE SOURCE: Departments of Medicine, Microbiology and Immunology, and Pathology, State University of New York Health Science Center, College of Medicine, Syracuse, New York 13210, USA.. perla@vax.cs.hscsyr.edu
CONTRACT NUMBER: RO1 DK 49221 (NIDDK)
SOURCE: JOURNAL OF BIOLOGICAL CHEMISTRY, (2000 Mar 10) 275 (10) 7261-72.
Journal code: HIV; 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AF058913; GENBANK-L19437; GENBANK-L27346; GENBANK-X03822
ENTRY MONTH: 200004
ENTRY DATE: Entered STN: 20000413
Last Updated on STN: 20000413
Entered Medline: 20000403

AB Repetitive elements flanked by exons 2 and 3 of the human **transaldolase** gene, thus termed **transaldolase**-associated repetitive elements, TARE, were identified in human DNA. Nonpolyadenylated TARE transcripts were detected by Northern blot analysis and cloned by reverse transcriptase-mediated polymerase chain reaction from human T lymphocytes. A dominant 1085-nucleotide long transcript, TARE-6, contained two adjacent Alu elements, a right monomer and a complete dimer, oriented opposite to the direction of transcription of the **transaldolase** gene. Reverse transcriptase-polymerase chain reaction and in vitro transcription analyses showed that transcription of TARE-6 proceeded in the orientation of the RNA pol III promoter of the Alu dimer and opposite to the orientation of the **TAL**-H gene. TAREs lacking RNA polymerase III promoter showed no transcriptional activity. In vitro transcription of TARE-6 was resistant to 1 microg/ml alpha-amanitin but sensitive to 100 microg/ml alpha-amanitin and tagetitoxin, suggesting involvement of RNA polymerase III. TAREs in both the **transaldolase** and HSAG-1 genomic loci were surrounded by TA target site duplications. Homologies between **transaldolase** and HSAG-1 break off internally at splice donor and acceptor sites. The results suggest RNA polymerase III-mediated transcription of TARE may be a source of repetitive elements, contributing to distinct genes and thus shaping the human genome.

L2 ANSWER 10 OF 29 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 5
ACCESSION NUMBER: 1999:176945 CAPLUS
DOCUMENT NUMBER: 130:222114
TITLE: Human **transaldolase**, its cDNA sequence, recombinant expression, autoantigenicity, and potential therapeutic uses
INVENTOR(S): Perl, Andras
PATENT ASSIGNEE(S): The Research Foundation of State University of New York, USA
SOURCE: U.S., 55 pp., Division of U.S. Ser. No. 326,119.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5879909	A	19990309	US 1998-57762	19980409
US 6018021	A	20000125	US 1994-326119	19941019

PRIORITY APPLN. INFO.: US 1994-326119 19941019

AB Human **transaldolase** (**TAL**-H), an enzyme which acts as an autoantigen, the cDNA coding therefore, peptides derived therefrom, and DNA control elements assocd. therewith are disclosed in this invention. The invention also provides for the prodn. of human **transaldolase** using recombinant techniques. The cDNA and amino acid sequences of **TAL**-H are provided, along with the DNA sequence of the promoter region of the **TAL**-H gene. The invention also provides the DNA sequence of **transaldolase**-assocd. repetitive element (TARE (TARE6)), which was discovered to constitute an integral part of the human **TAL**-H gene. The **TAL**-H polypeptides may be used in immunoassays for detecting subjects making anti-**transaldolase** antibodies and/or in diagnosing neurodegenerative diseases, such as multiple sclerosis (MS). The invention showed the amino acid sequence homologies between **TAL**-H and various proteins of HTLV-I, HIV-1, kunjin flavivirus, dengue virus, hog cholera virus and poliovirus. These preferred **TAL**-H sequences are targets for immune responses (antibody and/or T-cell mediated) which cross-react with epitopes of proteins from these viruses. The invention also showed that **transaldolase** was specifically expressed in oligodendrocytes in

the brain, cells which produce myelin in the central nervous system, which have primary involvement in pathogenesis of demyelinating diseases, including MS. Further, the invention showed that in a subset of patients with MS, antibodies to **transaldolase** were found in blood and cerebrospinal fluid. Still further, the invention showed the existence of cell-mediated immunoreactivity to **TAL**-H in patients with MS. Finally, the invention showed patients with HTLV-I-assocd. T cell leukemia (ATL) and with HIV infection were found to have antibodies that cross-reacted with **TAL**-H.

REFERENCE COUNT: 16
REFERENCE(S):
(1) Banki; AIDS Res Human Retrovir 1994, V10, P303 CAPLUS
(2) Banki, K; J Biol Chem 1994, V269, P2847 CAPLUS
(3) Banki, K; Proc Natl Acad Sci USA 1992, V89, P1939 CAPLUS
(4) Kaufman, D; Trends Pharm Sci 1993, V14, P107 CAPLUS
(8) Ohta, M; J Immunol 1986, V137, P3440 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 11 OF 29 MEDLINE DUPLICATE 6
ACCESSION NUMBER: 1999138826 MEDLINE
DOCUMENT NUMBER: 99138826 PubMed ID: 9973403
TITLE: Elevation of mitochondrial transmembrane potential and reactive oxygen intermediate levels are early events and occur independently from activation of caspases in Fas signaling.
AUTHOR: Banki K; Hutter E; Gonchoroff N J; Perl A
CORPORATE SOURCE: Department of Pathology, State University of New York Health Science Center, College of Medicine, Syracuse, NY 13210, USA.
CONTRACT NUMBER: RO1DK49221 (NIDDK)
SOURCE: JOURNAL OF IMMUNOLOGY, (1999 Feb 1) 162 (3) 1466-79. Journal code: IFB; 2985117R. ISSN: 0022-1767.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Abridged Index Medicus Journals; Priority Journals
ENTRY MONTH: 199904
ENTRY DATE: Entered STN: 19990426
Last Updated on STN: 19990426
Entered Medline: 19990413

AB Stimulation of the CD95/Fas/Apo-1 receptor leads to apoptosis through activation of the caspase family of cysteine proteases and disruption of the mitochondrial transmembrane potential (Deltapsim). We show that, in Jurkat human T cells and peripheral blood lymphocytes, Fas-induced apoptosis is preceded by 1) an increase in reactive oxygen intermediates (ROI) and 2) an elevation of Deltapsim. These events are followed by externalization of phosphatidylserine (PS), disruption of Deltapsim, and cell death. The caspase inhibitor peptides, DEVD-CHO, Z-VAD.fmk, and Boc-Asp.fmk, blocked Fas-induced PS externalization, disruption of Deltapsim, and cell death, suggesting that these events are sequelae of caspase activation. By contrast, in the presence of caspase inhibitors, ROI levels and Deltapsim of Fas-stimulated cells remained elevated. Because ROI levels and Deltapsim are regulated by the supply of reducing equivalents from the pentose phosphate pathway (PPP), we studied the impact of **transaldolase** (**TAL**), a key enzyme of the PPP, on Fas signaling. Overexpression of **TAL** accelerated Fas-induced mitochondrial ROI production, Deltapsim elevation, activation of caspase-8 and caspase-3, proteolysis of poly(A)DP-ribose polymerase, and PS externalization. Additionally, suppression of **TAL** diminished these activities. Therefore, by controlling the balance between mitochondrial ROI production and metabolic supply of reducing equivalents through the PPP, **TAL** regulates susceptibility to Fas-induced apoptosis. Early increases in ROI levels and Deltapsim as well as the dominant effect of **TAL** expression on activation of caspase-8/Fas-associated death domain-like IL-1beta-converting enzyme, the most upstream member of the caspase cascade, suggest a pivotal role for redox signaling at the initiation of Fas-mediated apoptosis.

L2 ANSWER 12 OF 29 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2000:94649 CAPLUS
DOCUMENT NUMBER: 133:2332
TITLE: Expression of xylose metabolism genes of Trichoderma reesei on various carbon sources measured by a series of Northern hybridizations
AUTHOR(S): Wang, Tianhong; Penttila, Merja; Gao, Peiji
CORPORATE SOURCE: The State Key Laboratory of Microbial Technology, Shandong University, Jinan, 250100, Peop. Rep. China
SOURCE: Weishengwu Xuebao (1999), 39(6), 503-509
CODEN: WSHPA8; ISSN: 0001-6209
PUBLISHER: Kexue Chubanshe

DOCUMENT TYPE: Journal
LANGUAGE: Chinese
AB The expression of xylose reductase (XR), xylitol dehydrogenase (XDH) and **transaldolase** (**TAL**) genes of Trichoderma reesei, measured by Northern hybridization, was studied by adding different carbon sources (20 kinds, including single and mixed carbon sources) into the basal medium on which T. reesei QM9414 was grown. The results indicated that two disaccharides, sophorose and xylobiose, act as strong inducers for the expression of XR and XDH. Lactose and arabinose were identified as inducers, also. The presence of glucose repressed the transcription of XR and XDH genes. XR and XDH genes were controlled by a catabolite repression mechanism. On the other hand, the **TAL** gene was strongly expressed on all the carbon sources used.

L2 ANSWER 13 OF 29 AGRICOLA DUPLICATE 7
ACCESSION NUMBER: 1999:47200 AGRICOLA
DOCUMENT NUMBER: IND21987630
TITLE: Fermentation of xylose/glucose mixtures by metabolically engineered Saccharomyces cerevisiae strains expressing XYL1 and XYL2 from Pichia stipitis with and without overexpression of TAL1.
AUTHOR(S): Meinander, N.Q.; Boels, I.; Hahn-Hagerdal, B.
CORPORATE SOURCE: Lund Institute of Technology/University of Lund, Lund, Sweden.
AVAILABILITY: DNAL (TD930.A32)
SOURCE: Bioresource technology, Apr 1999. Vol. 68, No. 1. p. 79-87
Publisher: Oxford, U.K. : Elsevier Science Limited.
CODEN: BIRTEB; ISSN: 0960-8524
NOTE: Special issue: Bioprocessing and characterization of lignocellulosics / edited by L.P. Ramos, A.L. Mathias, J.N. Saddler.
Includes references
PUB. COUNTRY: England; United Kingdom
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English
AB Anaerobic xylose conversion by two metabolically engineered Saccharomyces cerevisiae strains in the presence and absence of simultaneous glucose metabolism was investigated. One strain expressed XYL1 encoding xylose reductase (XR) and XYL2 encoding xylitol dehydrogenase (XDH) from Pichia stipitis, whereas the other additionally overexpressed TAL1 encoding **transaldolase** (**TAL**). Both strains formed xylitol as the main product of xylose metabolism. The TAL1-overexpressing strain gave a higher biomass yield and produced less carbon dioxide and somewhat less xylitol compared with the XYL1+XYL2 strain, indicating that **TAL** limited xylose metabolism in the latter. The ethanol yield was similar with both strains. The simultaneous metabolism of glucose enhanced xylose metabolism by causing a higher rate of xylose consumption and less xylitol and xylulose excretion, compared with xylose metabolism alone. Simultaneous xylose and glucose metabolism affected the growth rate negatively compared with growth on glucose alone. Additionally, comparison of the specific growth rate of the host strain, a reference strain with a plasmid without XYL1, XYL2 or TAL1, the XYL1+XYL2 strain and the XYL1+XYL2+TAL1 strain on glucose, showed that the presence of plasmids and expression of genes on the plasmids caused a decrease in specific growth rates related to the number of plasmids present and the number of structural genes on the plasmids. Both strains exhibited high XR and XDH activities in batch cultivation, but rapidly lost the activities in chemostat cultivation. Limitations in the xylose-metabolising pathway and further improvement of recombinant xylose-metabolising S. cerevisiae are discussed.

L2 ANSWER 14 OF 29 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1998:745174 CAPLUS
DOCUMENT NUMBER: 130:3125
TITLE: A transgenic Zymomonas capable of fermenting xylose and arabinose to ethanol
INVENTOR(S): Zhang, Min; Chou, Yat-chen; Picataggio, Stephen K.; Finkelstein, Mark
PATENT ASSIGNEE(S): Midwest Research Institute, USA
SOURCE: PCT Int. Appl., 23 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9850524	A1	19981112	WO 1998-US9171	19980405

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,

DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

US 5843760	A	19981201	US 1997-851767	19970506
AU 9871768	A1	19981127	AU 1998-71768	19980405
EP 1005530	A1	20000607	EP 1998-918955	19980405

R: DE, DK, FR, GB, NL

PRIORITY APPLN. INFO.:	US 1997-851767	19970506
	US 1994-228303	19940415
	US 1995-421996	19950414
	WO 1998-US9171	19980405

AB A transgenic Zymomonas expressing genes for xylose isomerase, xylulokinase, L-arabinose isomerase, L-ribulokinase, L-ribulose-5-phosphate 4-epimerase, **transaldolase** and transketolase and that can use arabinose or xylose as carbon sources is described. This organism can ferment arabinose and xylose to ethanol with a yield of about 75% of theor. at 30.degree. without pH control. The genes are introduced as operons under control of the promoters of the Zymomonas glyceraldehyde-3-phosphate dehydrogenase and enolase genes.

REFERENCE COUNT: 5
REFERENCE(S):
(1) Deanda, K; Applied and Environmental Microbiology 1996, V62(12), P4465 CAPLUS
(2) Picataggio; US 5514583 A 1996 CAPLUS
(3) Picataggio; US 5712133 A 1998 CAPLUS
(4) Picataggio; US 5726053 A 1998 CAPLUS
(5) Zhang, M; Science 1995, V267, P240 CAPLUS

L2 ANSWER 15 OF 29 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1998:402326 CAPLUS
DOCUMENT NUMBER: 129:86003
TITLE: **Transaldolase**-mediated regulation of apoptosis
INVENTOR(S): Perl, Andras; Banki, Katalin
PATENT ASSIGNEE(S): Research Foundation of State University of New York, USA
SOURCE: PCT Int. Appl., 85 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9825630	A1	19980618	WO 1997-US22770	19971212

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG

AU 9856971	A1	19980703	AU 1998-56971	19971212

PRIORITY APPLN. INFO.:	US 1996-32974	19961213
	WO 1997-US22770	19971212

AB **Transaldolase** (**TAL**) plays an important role in regulating the sensitivity of cells to apoptosis. Methods which upregulate **TAL** gene expression, such as by delivery of exogenous **TAL**-encoding DNA to a cell, or methods which stimulate **TAL** enzymic activity, such as induction of phosphorylation through protein kinase C, promote programmed cell death in response to apoptotic signals. Conversely, inhibition of **TAL** gene expression, such as by delivery of **TAL** antisense DNA, or the suppression of **TAL** enzymic activity, renders the cell resistant to apoptotic signalling. The present invention provides approaches to the treatment of conditions characterized by enhanced apoptosis, for example, neurodegenerative diseases, demyelinating diseases or HIV disease, or conditions in which apoptosis is inappropriately suppressed, for example cancer, certain virus infections and autoimmunity, by the appropriate up- or down-regulation of **TAL** expression or **TAL** enzymic activity.

L2 ANSWER 16 OF 29 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1998:785616 CAPLUS
DOCUMENT NUMBER: 130:37358
TITLE: Recombinant Zymomonas for xylose and arabinose fermentation to ethanol
INVENTOR(S): Zhang, Min; Chou, Yat-chen; Picataggio, Stephen K.; Finkelstein, Mark
PATENT ASSIGNEE(S): Midwest Research Institute, USA

SOURCE: U.S., 10 pp., Cont.-in-part of U.S. 5,726,053.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5843760	A	19981201	US 1997-851767	19970506
US 5514583	A	19960507	US 1994-228303	19940415
US 5726053	A	19980310	US 1995-421996	19950414
WO 9850524	A1	19981112	WO 1998-US9171	19980405
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9871768	A1	19981127	AU 1998-71768	19980405
EP 1005530	A1	20000607	EP 1998-918955	19980405
R: DE, DK, FR, GB, NL				

PRIORITY APPLN. INFO.:
US 1994-228303 19940415
US 1995-421996 19950414
US 1997-851767 19970506
WO 1998-US9171 19980405

AB This invention relates to single microorganisms which normally do not ferment pentose sugars which are genetically altered to ferment the pentose sugars, xylose and arabinose, to produce ethanol, and a fermn. process utilizing the same. Examples include Zymomonas mobilis which has been transformed with a combination of E. coli genes for xylose isomerase, xylulokinase, L-arabinose isomerase, L-ribulokinase, L-ribulose 5-phosphate 4-epimerase, **transaldolase** and transketolase. Expression of added genes are under the control of Z. mobilis promoters. These newly created microorganisms are useful for fermenting glucose, xylose and arabinose, produced by hydrolysis of hemicellulose and cellulose or starch, to produce ethanol. Thus, recombinant Z. mobilis produced EtOH from xylose, or arabinose, or a mixt. of xylose and arabinose at process yields of 91, 55, and 79% in 96 h (47 h for xylose only), resp. In the presence of glucose and xylose and arabinose, this strain fermented all three sugars to EtOH at a process yield of 79% within 48 h.

REFERENCE COUNT: 14
REFERENCE(S):
(2) Drummond; US 5041378 1991 CAPLUS
(3) Feldmann, S; Appl Microbiol V38, P354 CAPLUS
(4) Frost; US 5168056 1992 CAPLUS
(5) Frost; US 5272073 1993 CAPLUS
(6) Ingram; US 5000000 1991 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 17 OF 29 MEDLINE DUPLICATE 8
ACCESSION NUMBER: 1998234389 MEDLINE
DOCUMENT NUMBER: 98234389 PubMed ID: 9565623
TITLE: Molecular ordering in HIV-induced apoptosis. Oxidative stress, activation of caspases, and cell survival are regulated by **transaldolase**.
AUTHOR: Banki K; Hutter E; Gonchoroff N J; Perl A
CORPORATE SOURCE: Department of Pathology, State University of New York Health Science Center, College of Medicine, Syracuse, New York 13210, USA.
CONTRACT NUMBER: RO1 DK 49221 (NIDDK)
SOURCE: JOURNAL OF BIOLOGICAL CHEMISTRY, (1998 May 8) 273 (19) 11944-53.
Journal code: HIV; 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199806
ENTRY DATE: Entered STN: 19980618
Last Updated on STN: 20000303
Entered Medline: 19980605

AB Dysregulated apoptosis may underlie the etiology of T cell depletion by human immunodeficiency virus type 1 (HIV-1). We show that HIV-induced apoptosis is preceded by an exponential increase in reactive oxygen intermediates (ROIs) produced in mitochondria. This leads to caspase-3 activation, phosphatidylserine (PS) externalization, and GSH depletion. Since mitochondrial ROI levels are regulated by the supply of NADPH from the pentose phosphate pathway (PPP), the effect of **transaldolase** (**TAL**), a key enzyme of PPP, was investigated. Jurkat and H9 human CD4+ T cells were transfected with **TAL** expression vectors oriented in the sense or antisense direction. **TAL** overexpression

down-regulated glucose-6-phosphate dehydrogenase activities and GSH levels. Alternatively, decreased **TAL** expression up-regulated glucose-6-phosphate dehydrogenase activities and GSH levels. HIV-induced 1) mitochondrial ROI production, 2) caspase-3 activation, 3) proteolysis of poly(ADP-ribose) polymerase, and 4) PS externalization were accelerated in cells overexpressing **TAL**. In contrast, suppression of **TAL** abrogated these four activities. Thus, susceptibility to HIV-induced apoptosis can be regulated by **TAL** through controlling the balance between mitochondrial ROI production and the metabolic supply of reducing equivalents by the PPP. The dominant effect of **TAL** expression on oxidative stress, caspase activation, PS externalization, and cell death suggests that this balance plays a pivotal role in HIV-induced apoptosis.

L2 ANSWER 18 OF 29 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:105885 CAPLUS
DOCUMENT NUMBER: 130:222204
TITLE: Fermentation of xylose/glucose mixtures by metabolically engineered Saccharomyces cerevisiae strains expressing XYL1 and XYL2 from Pichia stipitis with and without overexpression of TAL1
AUTHOR(S): Meinander, Nina Q.; Boels, Ingeborg; Hahn-Hagerdal, Barbel
CORPORATE SOURCE: Applied Microbiology, Lund Institute of Technology/University of Lund, Lund, S-221 00, Swed.
SOURCE: Bioresour. Technol. (1998), Volume Date 1999, 68(1), 79-87
CODEN: BIRTEB; ISSN: 0960-8524
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Anaerobic xylose conversion by two metabolically engineered Saccharomyces cerevisiae strains in the presence and absence of simultaneous glucose metab. was investigated. One strain expressed XYL1 encoding xylose reductase (XR) and XYL2 encoding xylitol dehydrogenase (XDH) from Pichia stipitis, whereas the other addnl. overexpressed TAL1 encoding **transaldolase** (**TAL**). Both strains formed xylitol as the main product of xylose metab. The TAL1-overexpressing strain gave a higher biomass yield and produced less carbon dioxide and somewhat less xylitol compared with the XYL1 + XYL2 strain, indicating that **TAL** limited xylose metab. in the latter. The ethanol yield was similar with both strains. The simultaneous metab. of glucose enhanced xylose metab. by causing a higher rate of xylose consumption and less xylitol and xylulose excretion, compared with xylose metab. alone. Simultaneous xylose and glucose metab. affected the growth rate neg. compared with growth on glucose alone. Addnl., comparison of the specific growth rate of the host strain, a ref. strain with a plasmid without XYL1, XYL2 or TAL1, the XYL1+XYL2 strain and the XYL1 + XYL2 + TAL1 strain on glucose, showed that the presence of plasmids and expression of genes on the plasmids caused a decrease in specific growth rates related to the no. of plasmids present and the no. of structural genes on the plasmids. Both strains exhibited high XR and XDH activities in batch cultivation, but rapidly lost the activities in chemostat cultivation. Limitations in the xylose-metabolizing pathway and further improvement of recombinant xylose-metabolizing S. cerevisiae are discussed.
REFERENCE COUNT: 52
REFERENCE(S): (3) Boles, E; Yeast 1993, V9, P761 CAPLUS
(4) Bradford, M; Anal Biochem 1976, V72, P248 CAPLUS
(5) Bruinenberg, P; Appl Microbiol Biotechnol 1984, V19, P256 CAPLUS
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(7) Busturia, A; J Gen Microbiol 1986, V132, P379 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 19 OF 29 MEDLINE DUPLICATE 9
ACCESSION NUMBER: 97232257 MEDLINE
DOCUMENT NUMBER: 97232257 PubMed ID: 9077532
TITLE: Comparative analysis of antibody and cell-mediated autoimmunity to **transaldolase** and myelin basic protein in patients with multiple sclerosis.
AUTHOR: Colombo E; Banki K; Tatum A H; Daucher J; Ferrante P; Murray R S; Phillips P E; Perl A
CORPORATE SOURCE: Department of Medicine, State University of New York College of Medicine, Syracuse 13210, USA.
CONTRACT NUMBER: R01 DK 49221 (NIDDK)
SOURCE: JOURNAL OF CLINICAL INVESTIGATION, (1997 Mar 15) 99 (6) 1238-50.
Journal code: HS7; 7802877. ISSN: 0021-9738.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)

LANGUAGE: English
FILE SEGMENT: Abridged Index Medicus Journals; Priority Journals
ENTRY MONTH: 199704
ENTRY DATE: Entered STN: 19970507
Last Updated on STN: 19970507
Entered Medline: 19970425

AB Antibody and T cell-mediated immune responses to oligodendroglial autoantigens **transaldolase** (**TAL**) and myelin basic protein (MBP) were examined in patients with multiple sclerosis (MS). Immunohistochemical studies of postmortem brain sections revealed decreased staining by MBP- and **TAL**-specific antibodies in MS plaques, indicating a concurrent loss of these antigens from demyelination sites. By Western blot high titer antibodies to human recombinant **TAL** were found in 29/94 sera and 16/23 cerebrospinal fluid samples from MS patients. Antibodies to MBP were undetectable in sera or cerebrospinal fluid of these MS patients. Proliferative responses to human recombinant **TAL** (stimulation index [SI] = 2.47+/-0.3) were significantly increased in comparison to MBP in 25 patients with MS (SI = 1.37+/-0.1; P < 0.01). After a 7-d stimulation of PBL, utilization of any of 24 different T cell receptor Vbeta gene segments in response to MBP was increased less than twofold in the two control donors and six MS patients investigated. In response to **TAL**-H, while skewing of individual Vbeta genes was also less than twofold in healthy controls, usage of specific Vbeta gene segments was differentially increased ranging from 2.5 to 65.9-fold in patients with MS. The results suggest that **TAL** may be a more potent immunogen than MBP in MS.

L2 ANSWER 20 OF 29 MEDLINE DUPLICATE 10
ACCESSION NUMBER: 97480738 MEDLINE
DOCUMENT NUMBER: 97480738 PubMed ID: 9339383
TITLE: The human **transaldolase** gene (TALDO1) is located on chromosome 11 at p15.4-p15.5.
AUTHOR: Banki K; Eddy R L; Shows T B; Halladay D L; Bullrich F; Croce C M; Jurecic V; Baldini A; Perl A
CORPORATE SOURCE: Department of Medicine, State University of New York Health Science Center, College of Medicine, Syracuse 13210, USA.
CONTRACT NUMBER: CA-63333 (NCI)
HG-00333 (NHGRI)
RO1 DK 49221 (NIDDK)
SOURCE: GENOMICS, (1997 Oct 1) 45 (1) 233-8.
Journal code: GEN; 8800135. ISSN: 0888-7543.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AF003890
ENTRY MONTH: 199711
ENTRY DATE: Entered STN: 19971224
Last Updated on STN: 20000303
Entered Medline: 19971120

AB **Transaldolase** (**TAL**) is a key enzyme of the pentose phosphate pathway, which is responsible for generation of reducing equivalents to protect cellular integrity from reactive oxygen intermediates. While exons 2 and 3 are highly repetitive, the complete **TAL**-H gene is mapped to a single genomic locus (TALDO1(2)) by several independent approaches. Southern blot hybridization of a 827-bp 3' EcoRI fragment of the **TAL**-H cDNA to human-mouse somatic cell hybrid DNA localized TALDO1 to the p13-->pter region of chromosome 11. Fluorescence in situ hybridization with a 15-kb genomic fragment harboring exons 1 and 2 mapped TALDO1 to 11p15.4-p15.5. A truncated and mutated segment of **TAL**-H exon 5 terminating with a poly(A) tail was identified in a pseudogene locus (TALDOP1) on chromosome 1. Reverse transcriptase-PCR studies of human-mouse somatic cell hybrids revealed the presence of the functional **TAL**-H gene on chromosome 11 and its absence on human chromosome 1. Mapping of radiation hybrids placed TALDO1 between markers WI-1421 and D11S922 on 11p15.

L2 ANSWER 21 OF 29 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 11
ACCESSION NUMBER: 1997:34546 CAPLUS
DOCUMENT NUMBER: 126:129090
TITLE: Metabolic engineering and control analysis for production of aromatics: role of **transaldolase**
AUTHOR(S): Lu, Jia-ling; Liao, James C.
CORPORATE SOURCE: Dep. of Chemical Engineering, Texas A&M University, College Station, TX, 77843-3122, USA
SOURCE: Biotechnol. Bioeng. (1997), 53(2), 132-138
CODEN: BIBIAU; ISSN: 0006-3592
PUBLISHER: Wiley
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Arom. metabolites in Escherichia coli and other microorganisms are derived from 2 common precursors: phosphoenolpyruvate (PEP) and erythrose

4-phosphate (E4P). During growth on glucose, the levels of both E4P and PEP are insufficient for high throughput of aroms. because of the low C flux through the pentose pathway and the use of PEP in the phosphotransferase system. Transketolase and PEP synthase are effective in relieving this limitation and promoting high throughput of aroms. To det. whether **transaldolase**, another E4P-producing enzyme, is also a limiting factor in directing C flux to the arom. pathway, E. coli **transaldolase** gene (**tal**) was cloned and overexpressed in an aroB strain which excretes 3-deoxy-D-arabinoheptulosonate 7-phosphate (DAHP), the 1st intermediate in the arom. pathway. Overexpression of **transaldolase** did significantly increase the prodn. of DAHP from glucose. This result further supports the contention that the supply of E4P is limiting when glucose is the C source. However, overexpression of **transaldolase** in strains which already overexpress transketolase did not show a further increase in prodn. of aroms. This result was attributed to the satn. of E4P supply when transketolase was overexpressed. The flux control of DAHP prodn. is discussed on the basis of Metabolic Control Anal.

L2 ANSWER 22 OF 29 MEDLINE DUPLICATE 12
ACCESSION NUMBER: 97115842 MEDLINE
DOCUMENT NUMBER: 97115842 PubMed ID: 8955144
TITLE: Glutathione levels and sensitivity to apoptosis are regulated by changes in **transaldolase** expression.
AUTHOR: Banki K; Hutter E; Colombo E; Gonchoroff N J; Perl A
CORPORATE SOURCE: Department of Pathology, State University of New York Health Science Center, College of Medicine, Syracuse, New York 13210, USA.
CONTRACT NUMBER: RO1 DK 49221 (NIDDK)
SOURCE: JOURNAL OF BIOLOGICAL CHEMISTRY, (1996 Dec 20) 271 (51) 32994-3001.
Journal code: HIV; 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199701
ENTRY DATE: Entered STN: 19970219
Last Updated on STN: 19970219
Entered Medline: 19970123

AB **Transaldolase** (**TAL**) is a key enzyme of the reversible nonoxidative branch of the pentose phosphate pathway (PPP) that is responsible for the generation of NADPH to maintain glutathione at a reduced state (GSH) and, thus, to protect cellular integrity from reactive oxygen intermediates (ROIs). Formation of ROIs have been implicated in certain types of apoptotic cell death. To evaluate the role of **TAL** in this process, Jurkat human T cells were permanently transfected with **TAL** expression vectors oriented in the sense or antisense direction. Overexpression of **TAL** resulted in a decrease in glucose 6-phosphate dehydrogenase and 6-phosphogluconate dehydrogenase activities and NADPH and GSH levels and rendered these cells highly susceptible to apoptosis induced by serum deprivation, hydrogen peroxide, nitric oxide, tumor necrosis factor-alpha, and anti-Fas monoclonal antibody. In addition, reduced levels of **TAL** resulted in increased glucose 6-phosphate dehydrogenase and 6-phosphogluconate dehydrogenase activities and increased GSH levels with inhibition of apoptosis in all five model systems. The effect of **TAL** expression on susceptibility to apoptosis through regulating the PPP and GSH production is consistent with an involvement of ROIs in each pathway tested. Production of ROIs in Fas-mediated cell death was further substantiated by measurement of intracellular ROI production with oxidation-sensitive fluorescent probes, by the protective effects of GSH precursor, N-acetyl cysteine, free radical spin traps 5,5-dimethyl-1-pyrroline-1-oxide and 3,3,5,5-tetramethyl-1-pyrroline-1-oxide, the antioxidants desferrioxamine, nordihydroguaiaretic acid, and Amytal, and by the enhancing effects of GSH depletion with buthionine sulfoximine. The results provide definitive evidence that **TAL** has a role in regulating the balance between the two branches of PPP and its overall output as measured by GSH production and thus influences sensitivity to cell death signals.

L2 ANSWER 23 OF 29 MEDLINE DUPLICATE 13
ACCESSION NUMBER: 97093968 MEDLINE
DOCUMENT NUMBER: 97093968 PubMed ID: 8939431
TITLE: Transcriptional regulation of zwf, encoding glucose-6-phosphate dehydrogenase, from the cyanobacterium Nostoc punctiforme strain ATCC 29133.
AUTHOR: Summers M L; Meeks J C
CORPORATE SOURCE: Section of Microbiology, University of California, Davis 95616, USA.
SOURCE: MOLECULAR MICROBIOLOGY, (1996 Nov) 22 (3) 473-80.
Journal code: MOM; 8712028. ISSN: 0950-382X.

PUB. COUNTRY: ENGLAND: United Kingdom
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199703
ENTRY DATE: Entered STN: 19970321
Last Updated on STN: 19970321
Entered Medline: 19970313

AB The gene encoding glucose-6-phosphate dehydrogenase (G6PD), zwf, in Nostoc punctiforme strain ATCC 29133 is part of a four-gene operon that also encodes fructose bisphosphatase (fbp), **transaldolase** (**tal**) and a gene product termed OpcA, which is contranscribed with zwf and essential for G6PD activity. The effect of exogenous nitrogen and carbon sources on transcription of these genes was investigated. Growth in the presence of ammonium yielded low levels of transcripts encoding all genes of the operon, while growth under nitrogen-fixing conditions resulted in a large increase of transcripts encoding for fbp and zwf-opcA. When cells are grown in the presence of fructose, levels of transcripts encoding **tal** and zwf-opcA were increased, relative to levels in ammonium-grown cells. These results indicate that this facultatively heterotrophic cyanobacterium can respond to changes in its environment by altering transcription of genes involved in carbon catabolism. Primer extension identified five 5' ends corresponding to the major regulated transcripts which we conclude arise from independent transcriptional start points.

L2 ANSWER 24 OF 29 MEDLINE DUPLICATE 14
ACCESSION NUMBER: 96197413 MEDLINE
DOCUMENT NUMBER: 96197413 PubMed ID: 8616240
TITLE: **Transaldolase** genes from the cyanobacteria Anabaena variabilis and Synechocystis sp. PCC 6803: comparison with other eubacterial and eukaryotic homologues.
AUTHOR: Kohler U; Cerff R; Brinkmann H
CORPORATE SOURCE: Institut fur Genetik, Braunschweig, Germany.
SOURCE: PLANT MOLECULAR BIOLOGY, (1996 Jan) 30 (1) 213-8.
Journal code: A6O; 9106343. ISSN: 0167-4412.
PUB. COUNTRY: Netherlands
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-L47327; GENBANK-L47328
ENTRY MONTH: 199606
ENTRY DATE: Entered STN: 19960620
Last Updated on STN: 19960620
Entered Medline: 19960612

AB We have sequenced and analysed the **transaldolase** (**tal**) genes from two cyanobacteria, Anabaena variabilis (ATCC 29413) and Synechocystis sp. PCC 6803, which are filamentous heterocyst-forming and unicellular organisms, respectively. The deduced amino acid sequences of the two cyanobacterial **tal** genes are 78% identical and are highly homologous to both eubacterial and eukaryotic transaldolases (Escherichia coli, two yeasts, and man) with values ranging from 54 to 60% amino acid identity. In contrast, the **transaldolase** homologous sequences from the cyanobacterium Nostoc sp. ATCC 29133, from Mycobacterium leprae, and the partial sequence from the higher plant Arabidopsis thaliana have a much lower degree of homology with each other and relative to the sequences mentioned above. These data indicate three different types of transaldolases.

L2 ANSWER 25 OF 29 MEDLINE DUPLICATE 15
ACCESSION NUMBER: 96140731 MEDLINE
DOCUMENT NUMBER: 96140731 PubMed ID: 8549825
TITLE: Inhibition of the catalytic activity of human **transaldolase** by antibodies and site-directed mutagenesis.
AUTHOR: Banki K; Perl A
CORPORATE SOURCE: Department of Pathology, State University of New York, College of Medicine, Syracuse 13210, USA.
CONTRACT NUMBER: S07 RR-05648-23 (NCRR)
SOURCE: FEBS LETTERS, (1996 Jan 8) 378 (2) 161-5.
Journal code: EUH; 0155157. ISSN: 0014-5793.
PUB. COUNTRY: Netherlands
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199602
ENTRY DATE: Entered STN: 19960306
Last Updated on STN: 19960422
Entered Medline: 19960222

AB **Transaldolase** is a key enzyme of the pentose phosphate pathway. While antibody (Ab) 169, directed against the N-terminal 139 residues of

human **transaldolase** (**TAL**-H), had no effect on enzyme activity, Ab 12484 raised against full length and functional recombinant **TAL**-H inhibited catalytic activity. This tentatively mapped the catalytic site to the C-terminal 140-336 amino acid portion of **TAL**-H. Dihydroxyacetone transfer reactions catalyzed by **transaldolase** depend on Schiff base formation by a lysine residue. Replacement of lysine-142 by glutamine using site-directed mutagenesis resulted in a complete loss of enzyme activity, suggesting that lysine-142 is essential for the catalytic activity of **TAL**-H.

L2 ANSWER 26 OF 29 MEDLINE DUPLICATE 16
ACCESSION NUMBER: 96086004 MEDLINE
DOCUMENT NUMBER: 96086004 PubMed ID: 8534086
TITLE: Xylose-metabolizing Saccharomyces cerevisiae strains overexpressing the TKL1 and TAL1 genes encoding the pentose phosphate pathway enzymes transketolase and **transaldolase**.
AUTHOR: Walfridsson M; Hallborn J; Penttila M; Keranen S; Hahn-Hagerdal B
CORPORATE SOURCE: Department of Applied Microbiology, Lund University, Sweden.
SOURCE: APPLIED AND ENVIRONMENTAL MICROBIOLOGY, (1995 Dec) 61 (12) 4184-90.
Journal code: 6K6; 7605801. ISSN: 0099-2240.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199601
ENTRY DATE: Entered STN: 19960220
Last Updated on STN: 19960220
Entered Medline: 19960129

AB Saccharomyces cerevisiae was metabolically engineered for xylose utilization. The Pichia stipitis CBS 6054 genes XYL1 and XYL2 encoding xylose reductase and xylitol dehydrogenase were cloned into S. cerevisiae. The gene products catalyze the two initial steps in xylose utilization which S. cerevisiae lacks. In order to increase the flux through the pentose phosphate pathway, the S. cerevisiae TKL1 and TAL1 genes encoding transketolase and **transaldolase** were overexpressed. A XYL1- and XYL2-containing S. cerevisiae strain overexpressing TAL1 (S104-**TAL**) showed considerably enhanced growth on xylose compared with a strain containing only XYL1 and XYL2. Overexpression of only TKL1 did not influence growth. The results indicate that the **transaldolase** level in S. cerevisiae is insufficient for the efficient utilization of pentose phosphate pathway metabolites. Mixtures of xylose and glucose were simultaneously consumed with the recombinant strain S104-**TAL**. The rate of xylose consumption was higher in the presence of glucose. Xylose was used for growth and xylitol formation, but not for ethanol production. Decreased oxygenation resulted in impaired growth and increased xylitol formation. Fermentation with strain S103-**TAL**, having a xylose reductase/xylitol dehydrogenase ratio of 0.5:30 compared with 4.2:5.8 for S104-**TAL**, did not prevent xylitol formation.

L2 ANSWER 27 OF 29 MEDLINE DUPLICATE 17
ACCESSION NUMBER: 96079511 MEDLINE
DOCUMENT NUMBER: 96079511 PubMed ID: 8566707
TITLE: A comparison of gene organization in the zwf region of the genomes of the cyanobacteria Synechococcus sp. PCC 7942 and Anabaena sp. PCC 7120.
AUTHOR: Newman J; Karakaya H; Scanlan D J; Mann N H
CORPORATE SOURCE: Department of Biological Sciences, University of Warwick, Coventry, UK.
SOURCE: FEMS MICROBIOLOGY LETTERS, (1995 Nov 1) 133 (1-2) 187-93.
Journal code: FML; 7705721. ISSN: 0378-1097.
PUB. COUNTRY: Netherlands
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-U33282; GENBANK-U33285
ENTRY MONTH: 199603
ENTRY DATE: Entered STN: 19960315
Last Updated on STN: 19960315
Entered Medline: 19960301

AB The region of the genome encoding the glucose-6-phosphate dehydrogenase gene zwf was analysed in a unicellular cyanobacterium, Synechococcus sp. PCC 7942, and a filamentous, heterocystous cyanobacterium, Anabaena sp. PCC 7120. Comparison of cyanobacterial zwf sequences revealed the presence of two absolutely conserved cysteine residues which may be implicated in the light/dark control of enzyme activity. The presence in both strains of a gene fbp, encoding fructose-1,6-bisphosphatase, upstream from zwf strongly suggests that the oxidative pentose phosphate pathway in these organisms may function to completely oxidize glucose 6-phosphate to CO2.

The amino acid sequence of fructose-1,6-bisphosphatase does not support the idea of its light activation by a thiol/disulfide exchange mechanism. In the case of Anabaena sp. PCC 7120, the **tal** gene, encoding **transaldolase**, lies between zwf and fbp.

L2 ANSWER 28 OF 29 MEDLINE DUPLICATE 18
ACCESSION NUMBER: 95053697 MEDLINE
DOCUMENT NUMBER: 95053697 PubMed ID: 7964452
TITLE: Oligodendrocyte-specific expression and autoantigenicity of **transaldolase** in multiple sclerosis.
AUTHOR: Banki K; Colombo E; Sia F; Halladay D; Mattson D H; Tatum A H; Massa P T; Phillips P E; Perl A
CORPORATE SOURCE: Department of Pathology, State University of New York College of Medicine, Syracuse 13210.
CONTRACT NUMBER: SO7 RR-05648-23 (NCRR)
SOURCE: JOURNAL OF EXPERIMENTAL MEDICINE, (1994 Nov 1) 180 (5) 1649-63.
Journal code: I2V; 2985109R. ISSN: 0022-1007.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-L19437
ENTRY MONTH: 199412
ENTRY DATE: Entered STN: 19950110
Last Updated on STN: 19990129
Entered Medline: 19941201

AB Although the etiology of multiple sclerosis (MS) is unknown, there is compelling evidence that its pathogenesis is mediated through the immune system. Molecular mimicry, i.e., crossreactivity between self-antigens and viral proteins, has been implicated in the initiation of autoimmunity and MS. Based on homology to human T cell lymphotropic virus type I (HTLV-I) a novel human retrotransposon was cloned and found to constitute an integral part of the coding sequence of the human **transaldolase** gene (**TAL**-H). **TAL**-H is a key enzyme of the nonoxidative pentose phosphate pathway (PPP) providing ribose-5-phosphate for nucleic acid synthesis and NADPH for lipid biosynthesis. Another fundamental function of the PPP is to maintain glutathione at a reduced state and, consequently, to protect sulfhydryl groups and cellular integrity from oxygen radicals. Immunohistochemical analyses of human brain sections and primary murine brain cell cultures demonstrated that **TAL** is expressed selectively in oligodendrocytes at high levels, possibly linked to production of large amounts of lipids as a major component of myelin, and to the protection of the vast network of myelin sheaths from oxygen radicals. High-affinity autoantibodies to recombinant **TAL**-H were detected in serum (25/87) and cerebrospinal fluid (15/20) of patients with MS. By contrast, **TAL**-H antibodies were absent in 145 normal individuals and patients with other autoimmune and neurological diseases. In addition, recombinant **TAL**-H stimulated proliferation and caused aggregate formation of peripheral blood lymphocytes from patients with MS. Remarkable amino acid sequence homologies were noted between **TAL**-H and core proteins of human retroviruses. Presence of crossreactive antigenic epitopes between recombinant **TAL**-H and HTLV-I/human immunodeficiency virus type 1 (HIV-1) gas proteins was demonstrated by Western blot analysis. The results suggest that molecular mimicry between viral core proteins and **TAL**-H may play a role in breaking immunological tolerance and leading to a selective destruction of oligodendrocytes in MS.

L2 ANSWER 29 OF 29 MEDLINE DUPLICATE 19
ACCESSION NUMBER: 95020558 MEDLINE
DOCUMENT NUMBER: 95020558 PubMed ID: 7934848
TITLE: **Transaldolase** mutants in the yeast Kluyveromyces lactis provide evidence that glucose can be metabolized through the pentose phosphate pathway.
AUTHOR: Jacoby J; Hollenberg C P; Heinisch J J
CORPORATE SOURCE: Institut fur Mikrobiologie, Heinrich-Heine-Universitat, Dusseldorf, Germany.
SOURCE: MOLECULAR MICROBIOLOGY, (1993 Nov) 10 (4) 867-76.
Journal code: MOM; 8712028. ISSN: 0950-382X.
PUB. COUNTRY: ENGLAND: United Kingdom
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-Z17317
ENTRY MONTH: 199411
ENTRY DATE: Entered STN: 19941222
Last Updated on STN: 19941222
Entered Medline: 19941121

AB We have isolated the gene encoding **transaldolase** from Kluyveromyces lactis (KITAL1) by screening a genomic library of this yeast using the TAL1 gene of Saccharomyces cerevisiae as a radioactive probe.

The clone isolated contained an open reading frame of 1002 bp, encoding a protein with 76% identical residues in the deduced amino acid sequences as compared to **Tal** from S. cerevisiae. KITAL1 can complement a tal1 deletion of S. cerevisiae for enzymatic activity. The transcription start of KITAL1 was located at -69 bp relative to the ATG translation start codon. Deleting a large part of the open reading frame from the genome did not lead to any obvious phenotype. **Transaldolase** was not produced in such mutants as shown by immunological detection. In combination with a double null-mutant in the genes encoding the phosphofructokinase subunits in K. lactis (Klpfk1 Klpfk2 Kltal1), the cells lost their ability to grow on glucose. We take this as strong evidence that glucose is metabolized via the pentose phosphate pathway in this yeast when glycolysis is blocked. In addition, by tetrad analysis we detected a close linkage to KIPFK1 and inferred that KITAL1 is localized on chromosome I.